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Polymeric Micellar Drug Carriers with Fluorescent Properties

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Abstract:

Self-assembling polymeric surfactants, based on amphiphilic block copolymers into nano-sized aggregates in aqueous solution, are of great interest in the biomedical fields as one class of promising carrier systems, for drug delivery, gene therapy and diagnostic biosensors.[1] The incorporation of fluorescent probes into polymeric micelles has been fulfilled either by physically encapsulation or chemically attachment of fluorophores. [2] These micelle-based fluorescent probes not only facilitate better dispersion of fluorophores in biological environments, but also reduce their cytotoxicity by avoiding direct contact with normal cells or tissues. In this work we present new water soluble amphiphilic polymers, poly(acrylic acid) macroRAFT (PAA) **1** and poly(acrylic acid)-*block*-poly(9-vinylanthracene) (PAA-*b*-P9VA) **2**, for the production of the mixed fluorescent micelles. Fluorescence assays were performed to monitoring the effect of their ratio on the formation of mixed micelles and to determine **1**'s critical micelle concentration (cmc). The cmc was also evaluated by surface tension measurements.

References

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2. Liu, J., et al., *Single Nanoparticle Imaging and Characterization of Different Phospholipid-Encapsulated Quantum Dot Micelles.* Langmuir, 2012. **28**(28): p. 10602-10609.